Information Leakages Prior to 13D Filings

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Abstract

We determine strong evidence of informed trading prior to 13D filings. Second, informed trading is greater prior to 13D relative to 13G filings. Third, among 13D filings, the level of informed trading is higher when the filer is a nonfinancial corporation, private investment firm, intends to merge or acquire, or intends to be an activist investor. Fourth, we find that most informed trading before a 13D filing is during the event window (-10, -6). Lastly, we find that information contained in a Schedule 13D filing is almost entirely incorporated into stock prices 6 days before the filing is made public.

I. INTRODUCTION

Schedule 13D filings have served as useful signals regarding the likelihood of acquisition (Walkling, 1985, and Akhigbe, Martin, and Whyte, 2007), the ability of the market to anticipate a full acquisition (Jarrell and Poulsen, 1989), and the price paid for the remaining shares of the target under some conditions (Hirshleifer and Titman, 1990, Jegadeesh and Chowdry, 1992, Singh, 1998, and Betton, Eckbo, and Thorburn, 2008). They can also be used to predict the number of bidders that will ultimately bid for a target (Ravid and Spiegel, 1999, and Betton and Eckbo, 2000), and effectively predict the ultimate winner when there are competing bids for a target (Bulow, Huang, and Klemperer, 1999). They may even be effective in reducing management's resistance to a full acquisition (Jennings and Mazzeo, 1993, and Betton and Eckbo, 2000).

Since a 13D filing can influence the likelihood that a firm will become a takeover target, it is not surprising that the filing elicits a market reaction. Mikkelson and Ruback (1985), and Brav, Jiang, Partnoy, and Thomas (2008) have documented a positive and significant average abnormal return in response to 13D filings. The strong favorable share price response can be attributed to its signal about an increased likelihood that the firm will be targeted for a takeover. However, little is known about whether the market anticipated the 13D filing at all or why the degree to which the market anticipated the 13D filing might vary among filings. Our objective is to determine whether the market anticipated the 13D filing by measuring the degree of information leakage. Further, if the market does anticipate a 13D filing, we will estimate whether the market also correctly anticipated the information contained in the filing. We also compare the information leakage of 13D filings to a control group of 13G filings (by institutional investors who are restricted from takeovers) to determine whether information leakage of 13D filings differs from that of 13G filings. We also test for various characteristics that could explain the variation in the information leakage among 13D filings.

Our analysis differs from earlier analyses on information leakage because we not only find evidence of information leakages, but also ascertain the information contained in the leak. Our analysis differs from previous analyses on Schedule 13D filings because we are solely concerned with what the market can anticipate, and do not include announcement or post-announcement returns. We only extrapolate that if previous research has shown announcement returns are greater if the 13D filer is a

possible full-acquirer, then so too should information leakage prior to the 13D filing be greater if the filer will be a potential full-acquirer. This allows us to test not only if there was an information leakage, but also what information was contained in the leak. This result is new to the literature.

We find strong evidence of an information leakage (as measured by the stock price runup in the target firm) before a Schedule 13D filing, but not before a 13G filing. We also find that within the subset of 13D filings, the information leakage in the target runup varies. For the sample analyzed, the mean target runup is 12.7% before all 13D filings, but the runup is even larger if the acquirer is a nonfinancial corporation or a private investor. In addition, the target runup is relatively large if the intent of the acquirer was to merge with or acquire the target, or be an activist investor. Thus, the information leakage reflects the type of acquirer and the intent of the acquirer prior to disclosure in the filing.

We also found that the target runup before a 13D filing is greatest during the event window (-10, -6). Therefore, future academic research that estimates the share price response surrounding 13D filings should use a window extending to at least 10 days prior to the filing.

Lastly, by comparing target runup prior to a 13D filing with announcement abnormal returns we find that the 13D filing and its contents are almost entirely anticipated by the market. As such, very little information is revealed to the market when the 13D filing is made public.

II. BACKGROUND ON 13D AND 13G FILINGS

Schedule 13D filings must be made within 10 days of acquiring a beneficial ownership of 5% or greater of the outstanding common stock of a U.S. public company. The use of the qualifier 'beneficial' is important because related, yet different entities, may have to file a schedule 13D if their combined ownership of the target is 5% or greater and their voting or investment power is combined.

In the 10 days after the acquirer obtains a 5% beneficial ownership the acquirer may continue to make open market purchases of the target's stock. Only after the filing of the 13D is the acquirer prohibited from making further open market purchases without additional filings. If the acquirer wishes to make a tender offer for the target, a 14D form must be filed with the S.E.C. Filing a Schedule 13D allows the investor to behave in an active manner.

A passive investor or qualifying institutional investor who acquires a beneficial ownership of 5% or more of a class of equity securities may file a Schedule 13G instead of a 13D. The filing of a Schedule 13G constrains the investor to act in a passive manner. If investors originally file a Schedule 13G, and later decide to become an active investor, they must re-file as a 13D.

Schedule 13G reporting requirements are by design less stringent. If a qualified institutional investor buys a beneficial ownership of 5% or more in a registered security in a calendar year, and continues to maintain such ownership through the end of that year, then the buyer must file an initial Schedule 13G within 45 days of year end (February 14th). However, if the qualified institutional investors' beneficial ownership exceeds 10% before the end of the calendar year, then an initial Schedule 13G must be filed within 10 days of the end of the month in which the 10% threshold was surpassed. The differing timelines for filing Schedule 13Ds and 13Gs has the effect of distancing the filing of a Schedule 13G from the actual date that the investor purchased the shares of the registered security.

Within the Schedule 13D and 13G filings is information important to this analysis. First, the filing contains information regarding the class of security acquired. Second, the filing provides the contact information of the acquirer and other general background information about the acquirer including criminal history. Third, both Schedule 13D and 13G filings report the percent of the class of

security that the bidder owned in the target at the time of filing. Fourth, Schedule 13D filings require the acquirer to cite a reason for the acquisition of the target's shares. The acquirer has latitude to cite reasons ranging from hostile takeover to simply believing that the target's shares are undervalued. The Schedule 13D filing also discloses how the acquirer financed the purchase of the target's stock. Along with the above information, the acquirer is allowed to submit, 'Materials to be filed as Exhibits'. These exhibits are often letters to management on ways they may go about better managing the target company. Moreover, letters to management in the case of a hostile takeover are included in the filing as exhibits.

III. HYPOTHESES

To the extent that information leaks to investors about the characteristics of a 13D filing, the stock price of the target firm may rise prior to the filing. We use the term information leakage broadly to reflect either inside information or public information that some investors use to take positions in a stock, thereby affecting the value of the stock. Our analysis attempts to identify the characteristics of the acquirer or of the 13D filing that are relevant to investors who capitalize on information leakages. We hypothesize that the information leakage prior to a 13D filing is influenced by the following characteristics.

Filing Status

Information may be leaked in the preparation of a legal filing. We expect that the information leakage will be greater for the 13D rather than 13G filing. If investors can distinguish among the anticipated filings by active investors and passive acquirers, they should be able to benefit to a greater degree by taking positions in the targets that will be pursued by active acquirers. When active acquirers pursue a target, this might lead to a complete takeover or a corporate restructuring of the target, which results in a higher gain on the target's stock. Conversely, taking a position in a firm that is targeted by passive institutional investors is typically subject to more limited gains because there may be no subsequent action that raises the value of the target's stock.

Acquirer Identity Characteristics

Within the sample of 13D filings, some of the acquirers are corporations that are potential full-acquirers, while other acquirers are institutional investors that are not likely to pursue a complete takeover. Akhigbe, Martin, and Whyte (2007) show that toeholds acquired by corporate bidders are more likely to result in a full acquisition when compared with all other toehold acquirers. Thus, the information leakage should be larger when 13D filers are non-financial corporations, relative to when the 13D filer is an investment advisor or broker.

Furthermore, private investment firms such as hedge funds or private equity firms that acquire a stake in a target are likely to take initiatives that would enhance the target's value even if they do not plan a complete takeover. They might even facilitate a takeover through a consortium of investors if they can not afford a takeover on their own. To the extent that the stake in the target is acquired by a possible activist, and the identity of the 13D filer leaks before the filing, the information leakage before a 13D filing should be greater if the acquirer is a private investment firm relative to an investment advisor or broker. Therefore, we expect that the level of informed trading in the target prior to 13D filing (as measured by the target runup) is higher when the acquirer is a nonfinancial corporation or a private investor. Conversely, when the acquirer is an investment advisor or broker[1], we expect that the level of informed trading in the target prior to the filing should be smaller.

Acquirer Intention Characteristics

If the acquirer filing the 13D intends to merge with or fully acquire the target, and this information leaks before the filing of the Schedule 13D, then we expect this information to significantly increase target runup. In the study by Mikkelson and Ruback (1985), 132 out of 230 Schedule 13D filings from 1978 to 1980 indicated a motive for their partial acquisition. Of these 132, only 26 of the partial acquirers (20%) indicated that the motive for the purchase was as a precursor to a potential full-acquisition and the remaining 106 indicated the purpose of the transaction was as an investment. For the 26 partial acquisitions that were possible full-acquisitions, the 2-day CAR around the filing of the Schedule 13D was 7.74%. The remaining 106 filings of partial acquisitions for investment purposes had a 2-day filing CAR of 3.24%. Our analysis attempts to determine if the market can anticipate (before the filing) whether a partial acquisition is for an investment or for a planned full bid.

A 13D filing by an acquirer may have a more pronounced impact if the filing specifies that the investor intends to be an activist. This leaves no doubt that the investor will aggressively pursue changes in the target's management or operations that could enhance the value of the target. To the extent that there is an information leakage about this type of filing, the impact may be more pronounced than if the filing specifies no activist intent.

If information leaks before the filing of a Schedule 13D that the acquirer intends to either form a joint venture with the target or simply invest in the target without being an activist, then we expect the information leakage to be significantly less than in the cases where the acquire intends to merge with or acquire the target or be an activist investor.

IV. DATA

Sample Selection Criteria

The data set used to conduct our analysis is primarily composed of information gathered from each initial Schedule 13D and 13G filing with the S.E.C. It is limited to targets who are members of the S&P 500, because these targets are closely monitored by investors, and have a very large trading volume. Further we exclude all Schedule 13D and 13G filings not related to stock purchases.

The dates for Schedule 13D and 13G filings are found using 10K Wizard. We exclude filings for targets in the financial and utility industries, because the information leakages in those industries may be tempered by regulatory oversight. We also exclude any Schedule 13D or 13G filing that occurs within 15 trading days of an earlier Schedule 13D or 13G filing with the same target.

Our sample includes every Schedule 13D filing with an S&P 500 firm as the target that meet our specified criteria within the period Jan 1, 2004 to Dec 31, 2007. A total 123 13D filings satisfy our criteria and have sufficient CRSP and Compustat data for the quarter prior to the acquisition. To test whether the information leakage for Schedule 13D filings differs from Schedule 13 G filings, we also gather a sample of Schedule 13G filings. Because there are thousands of Schedule 13G filings per year, we choose a random sample of 200 13G filings over the same period Jan 1, 2004 to Dec 31, 2007.

Type of 13D Acquirer (Filer)

In order to categorize the acquirer (filer) in each Schedule 13D into types, we use the description of the acquirer given in 'Item 2: Identity and Background'. Using this description, we will categorize each acquirer into four categories: Non-financial corporation; Private Investment Firm; Investment Advisor/Broker.

Below is an example of the language of 'Item 2' on the Schedule 13D which would classify an acquirer as an "Investment Advisor/Broker".

"Item 2. <u>Identity and Background</u>

...(c) FCP provides investment management services to private individuals and   institutions. FCA serves as the general partner of FCP. The principal occupation of   Ms. Fine   is   investment management. The principal occupation of Mr. Jozwiak is Chief   Operating Officer and Chief Financial Officer of FCP and its affiliates...."

From this description we define the acquirer as an 'Investment Advisor/Broker' because it is investing on others' behalf with their knowledge of the investment. The excerpt above is from the 12/21/2007 filing which reported a stake in the target Coinstar Inc., purchased by Fine Capital Partners L.P. and related entities.

We categorize an acquirer as a 'Private Investment Firm' if it is investing in the private equity or hedge fund style whereby a partnership is formed, and a fund raised, the proceeds of which are invested without consulting the investors before investment. Also in this category are private investors. Below is an example of the language under 'Item 2' of a Schedule 13D which would classify the acquirer as a 'Private Investment Firm'. The excerpt is from the 12/26/2007 filing of the ownership stake in the target Pharmion Corp. bought by the acquirer S.A.C. Capital Advisors LLC and related entities.

"Item 2. <u>Identity and Background</u>

...(c) The principal business of each of SAC Capital Advisors and SAC Capital   Management is to serve as investment manager to, and to control the investing and   trading in securities by, a variety of private investment funds, including SAC   Associates...."

The final category is distinctive. Under 'Item 3' of the Schedule 13D it will list the name and background of non-financial corporations.

Acquirer Intent

In each Schedule 13D filing, there is a description of the acquirer's intent under 'Item 4: Purpose of the Transaction'. We use this description to categorize the acquirer's intent into one of four categories: Investment with no Activism; Activist; Joint Venture; Merge or Acquire. In both the 'Investment with no Activism' and 'Activist' cases the purpose is listed as investment. However in the latter 'Activist' case within 'Item 4' the acquirer will state an intent to meet with target management and shareholders. This intention is absent in the former case. If a joint venture, merger, or acquisition is intended, this is explicitly mentioned in 'Item 4'.

Other Data

From each Schedule 13D and 13G filing, we will record the date that the acquirer crossed the 5% threshold of ownership, and the percent of the target's common stock that the acquirer owned at the time of filing. We also record whether the acquirer is a foreign individual or firm. This is listed in each filing under '6. Citizenship or Place of Organization'. Stock market data for each firm which is the target in a 13D or 13G filing are obtained from the Center for Research in Security Prices (CRSP).

We use the target's size (as measured by the natural logarithm of market capitalization) as a proxy for the target's stock liquidity before the date of the filing. The correlation between a firm's size and bid-ask spread was established by Roll (1984). Firm size has also been shown to have an inverse correlation with a stock's returns (Banz, 1981, Reinganum, 1981, Fama and French, 1992). This negative correlation implies that firm size may be an appropriate proxy for a stock's liquidity (Amihud and

Mendelson, 1986). We obtain each target's market capitalization, as of the end of the year preceding the filing, from Standard and Poor's COMPUSTAT North America.

We also measure each target's past performance using Chung and Pruitt's (1994) approximation of Tobin's Q. This approximation requires data on each target's market capitalization, liquidating value of preferred stock, short term liabilities less its short term assets plus the book value of long term debt, and total assets. These data are collected from *Standard and Poor's COMPUSTAT North America* at the end of each target's fiscal year preceding the filing.

V. METHODOLOGY

Comparison of Information Leakages Prior to 13D Versus 13G Filings

We first apply a multivariate model to determine whether the runup prior to a 13D filing varies from that of a 13G filing, while controlling for other characteristics. The information leakage is the runup in the target's stock price prior to the filing, measured as the target's cumulative abnormal return (CAR) over the intervals (-10, -1), (-5, -1), and (-2, -1) relative to the filing date. Cumulative abnormal returns are market adjusted using CRSP value and equal weighed portfolios.

Since our focus here is on testing whether the information leakage differs for 13D versus 13G filings, we do not include variables representing type of acquirer and intent of filing. The acquirer type and intent is already reflected in the indicator variable G.

We control for the proportion of the target purchased by the acquirer, since the purchase of a larger proportion could place upward pressure on the target stock price. We control for whether the acquirer is foreign because information leakage may be greater when the acquirer is a foreign firm. A foreign firm is less likely than a domestic firm to acquire a stake in a target while remaining unnoticed. It may be less familiar with U.S. capital markets than a domestic firm, and may need to rely on more intermediaries. Further, many foreign corporate investments are made through a domestic holding company which creates more avenues for information leakage.

We control for size of the target firm, as very large firms are less likely to be subjected to a takeover. Thus, firm size may reveal the intention of an acquirer without any information being leaked except as to an imminent filing. We also control for past performance of the target, as it could affect the type of acquirer that would buy a stake in the target and thereby reveal the identity of the acquirer without any information being leaked.

The following model is applied to test the effect of the 13G filing versus 13D filing on the information leakage, while controlling for other factors:

$$Runup_i = \beta_0 + \beta_1 G_i + \beta_2 PT_i + \beta_3 FRGN_i + \beta_4 (PT_i)(\ln(SIZE_i)) + \beta_5 \ln(SIZE_i)$$
$$+\beta_6 TOBINQ_i + \varepsilon_i \tag{1}$$

where:

G = Indicator variable taking the value 1 when the Schedule filed is a 13G and 0 if the Schedule filed is a 13D.

PT = the percentage of the target which the acquirer owned as reported in the Schedule 13D filing less 5%. In the case of Schedule 13G filings PT $\equiv$ 0.

FRGN: Indicator variable taking the value 1 when the acquirer is foreign and 0 otherwise. The data are gathered from the section, 'Citizenship or Place of Organization' in each Schedule 13G and 13D.

ln(SIZE) = natural logarithm of the target's market capitalization at the end of the year preceding the Schedule 13D or 13G filing. Market capitalization for each target is a proxy for liquidity, and is obtained from *Standard and Poor's COMPUSTAT North America*.

TOBINQ = we will use Chung and Pruitt's (1994) approximation for Tobin's Q:

$$Approximate\ Q = \frac{MVE + PS + DEBT}{TA}$$

where MVE is each target's market capitalization, PS is the liquidating value of each target's preferred stock, and DEBT is each target's short term liabilities less its short term assets plus the book value of the target's long term debt, and TA is each target's total assets. These data are collected from *Standard and Poor's COMPUSTAT North America*.

Since target stock liquidity interacts with the proportion of the target that the acquirer bought in the days before the 13D filing to determine the effect of the buying on the target's share price, we will include such an interaction term (employing the natural logarithm of the target's market capitalization for the target's stock liquidity) in the model.

Explaining the Variation in Information Leakage Prior to 13D Filings

Next, we turn our attention to a sample of 13D filings only, and exclude 13G filings. This analysis is intended to examine the cross-sectional variation in the information content of 13D filings, while precluding any possible influence of 13G filings on the sensitivity of the information leakage (the dependent variable) to the other characteristics.

Our dependent variable is the target's stock price runup, which serves as a proxy for the degree of information leakage prior to the filing. For the subset of 13D filings, we intend to ascertain whether the type or intent of the acquirer affects the target's stock price runup, while controlling for other characteristics.

$$Runup_i = \beta_0 + \beta_1 CORP_i + \beta_2 PRIINV_i + \beta_3 PT_i + \beta_4 FRGN_i + \beta_5 (PT_i)(\ln(SIZE_i) +$$

$$\beta_6 \ln(SIZE_i) + \beta_7 TOBINQ_i + \varepsilon_i \qquad\qquad (2)$$

where:

Runup = cumulative abnormal return of the target's stock over the intervals (-10, -1), (-5, -1), and (-2, -1) relative to t = 0 being the filing of the Schedule 13D or 13G.

CORP = Indicator variable taking the value 1 when the acquirer is a non-financial corporation and 0 otherwise. The data are gathered from 'Item 2' of each 13D filing.

PRIINV = Indicator variable taking the value 1 when the acquirer is a private investor or private investment firm and 0 otherwise. The data are gathered from 'Item 3' of each 13D filing, and the remaining variables are controls that were identified earlier.

We exclude the acquirer's stated intent within this model, as the set of variables indicating the acquirer type is highly correlated with the set of variables indicating the acquirer's intent. For example, a non-financial corporation commonly cites a merger or acquisition as the intended purpose of the acquisition of shares in the target. However, the great majority of filers who cite a merger or acquisition (or joint venture) as the reason are non-financial corporations. This is because generally all those who intend to merge or acquire are non-financial corporations, though not vice versa. Also, since many non-financial corporations and private investment firms are categorized with the intent to be an activist investor, a separate model is warranted. To assess the impact of the acquirer's intent, we apply the following model:

$$Runup_i = \beta_0 + \beta_1 INTMA_i + \beta_2 INTJVEN_i + \beta_3 INTACTINV_i + \beta_4 PT_i + \beta_5 FRGN_i$$
$$+ \beta_6 (PT_i)(\ln(SIZE_i)) + \beta_7 \ln(SIZE_i) + \beta_8 TOBINQ_i + \varepsilon_i \qquad (3)$$

where:

INTMA: Indicator variable taking the value 1 when the acquirer in a Schedule 13D intends to merge with or acquire the target and 0 otherwise. The data are gathered from 'Item 4' of each 13D filing.

INTJVEN: Indicator variable taking the value 1 when the acquirer in a Schedule 13D intends form a joint venture with the target and 0 otherwise. The data are gathered from 'Item 4' of each 13D.

INTACTINV: Indicator variable taking the value 1 when the acquirer in a Schedule 13D intends to be an activist investor and 0 otherwise. The data are gathered from 'Item 4' of each 13D filing, and the control variables were defined earlier.

VI. RESULTS

Univariate Analysis

We first provide the information leakage (as measured by target runup prior to the filing) under various conditions based on univariate analyses. The results are summarized in table 1 below. Notably, the target runup before a Schedule 13D filing is 12.71% over the (-10, -1) event window, whereas the target runup before a 13G filing over the same window is -0.08%. These runups are significantly different at the 1% level (and further the runup before a Schedule 13D filing is significantly greater than zero at the 1% level). This evidence is consistent with the hypothesis that the runup is stronger when it precedes filings that may lead to major changes in the target, such as a takeover or activism. Thus, the informed trading reflects the type of filing.

The univariate analysis results in table 1 are also evidence of significant cross-sectional variation in target runup before a Schedule 13D filing, depending on both the identity and intent of the acquirer. If the acquirer is a non-financial corporation or a private investor, the target runup before the 13D filing is

14.32%, versus only 1.42% when the acquirer is not a non-financial corporation or private investor, and the difference is significant at the 0.1% level. This result supports our hypothesis regarding how the level of informed trading (as measured by target runup) can be dependent on the type of acquirer.

If the acquirer's avowed intent is to merge with or acquire the target, the mean runup before the 13D filing is 19.35% as opposed to 8.82% if the acquirer's intention is for other reasons. The 10.53% differential in runup for an acquirer with the intent to merge with or acquire the target is statistically significant at the 1% level, which supports our hypothesis. Pooling target runup when the acquirer's intent is either to merge/acquire or to take an activist role results in a mean target runup of 19.73%, versus 2.61% if the acquirer's intent is for other reasons (passive investment or joint venture with the target). This differential in runup of 17.12% is significant at the 1% level.

[Insert Table 1 here]

Interestingly, the majority of the target runup before a Schedule 13D filing over (-10, -1) occurs within the (-10, -6) window. The target runup within the (-10, -6) window is 9.38%, versus 3.39% within the (-5, -1) window. The mean target CAR(-50, 20) is plotted in figure 1 below for the entire sample of 13D filings, as well as for each subset of 13D filings by intent and identity of the acquirer.

[Insert Figure 1 here]

In fact, 92% of the effect of a Schedule 13D filing on the target's stock is realized before 3 days prior to the filing. These results show very little new information is revealed to the market when the Schedule 13D filing is made public.

Multivariate Analyses

Testing the error terms from ordinary least-squares estimations of the below regression equations, using the Breusch-Pagan test, found no evidence for significant heteroscedasticity. We will therefore report the results from ordinary least-squares estimations. To reduce any effect of outliers on the estimated coefficients, we also estimate each equation using robust regression employing the Huber weight function. The conclusions from the ordinary least-squares estimation are confirmed by the robust regressions.

Abnormal returns for the following regressions were calculated using the market model with respect to the CRSP equally-weighted index. The regression equations were also estimated using abnormal returns calculated with CRSP value-weighted index, as well as market adjusted returns. The results are invariant to the choice of abnormal return calculation.

We apply multivariate analyses based on three different windows that measure the stock price runup of the target prior to the filing. Since it was shown earlier that much of the runup in the target stock price occurs within days (-10, -6), we emphasize the results for the CAR (-10, -1) that contains those days.

Table 2 contains the results of the ordinary least-squares regressions of target runup on whether the filing was a Schedule 13D or 13G. These regressions control for the percentage of the target purchased before the announcement of the Schedule 13D, whether the acquirer is foreign, the size of the target, and a measure of target valuation (Tobin's Q).

Table 2 shows that after controlling for these variables, target runup is 10% higher over the (-10, -1) event window if the filing is a 13D relative to a 13G. This result is significant at the 1% level. Over

the (-5, -1) event window, target runup is 3% higher before a 13D filing than before a 13G filing. This result is again significant at the 5% level. Over the (-2, -1) event window there is no significant distinction between 13D and 13G filings. Overall, the results support our hypothesis that the information leakage is significantly greater before a Schedule 13D relative to a 13G filing.

Regarding the control variables, the PT variable is also positive and significant, which suggests a stronger runup prior to the filing when the filer takes a larger position in the target firm. The interaction term representing the PT and SIZE variables suggests that the PT effect on the target runup over the (-10, -1) window is reduced for larger firms. The other control variables are not significant when using either the (-10, -1) or (-5, -1) windows to measure the dependent variable.

[Insert Table 2 here]

Tables 3 and 4 contain the results of the ordinary least-squares regressions of target runup before a Schedule 13D (for three different windows) on both the intent and identity of the acquirer.   Also, we control for the percentage of the target purchased by the acquirer before the filing of the Schedule 13D, whether the acquirer is foreign, the size of the target, and a measure of target valuation (Tobin's Q).

Tables 3 and 4 show the indicator variables may explain the cross-sectional variation in target runup over the event window (-10, -1), but they do not explain such variation over the event windows (-5, -1) and (-2, -1). This is because, as seen in figure 1, the majority of the target runup is within (-10, -6).

When interpreting the coefficients of tables 5 and 6, keep in mind that each regression has qualitative explanatory variables with more than two categories. For example, in table 3 when INTMA = INTACTINV = INTJVEN = 0 then the acquirer is in the category INTINV (passive investor). It follows the coefficient of INTMA may be interpreted as how much higher or lower target runup is when the acquirer's identity is INTMA relative to INTINV for any given level of the other explanatory variables (the percent of the target bought by the acquirer, whether the acquirer is foreign, target size, and Tobin's Q).   INTACTINV and INTJVEN have the same interpretation as INTMA.   In table 4 when NONFINCORP = PRIINV = 0, then the acquirer is an investment advisor or broker. The interpretation of the coefficients of NONFINCORP and PRIINV are analogous to the INTMA case.

Table 3 shows that when using the CAR over the (-10, -1) window as the dependent variable, the coefficient of INTMA is positive and significant at the 5% level. This result supports the hypothesis of a higher stock price runup prior to 13D filings when the intent of the acquirer is to merge or acquire, even while controlling for other characteristics. Table 3 also shows that when using the CAR over the (-10, -1) window as the dependent variable, the coefficient of INTACTINV is positive and significant at the 5% level. This result supports the hypothesis of a higher stock price runup prior to 13D filings when the acquirer intends to be an activist investor, even while controlling for other characteristics.

The coefficient of INTJVEN is not significant, suggesting no relationship between the runup prior to the 13D filing and the intent to form a joint venture. By pooling both the joint venture and passive investment intention into one variable, and estimating the three regression equations in table 3 with respect to target runup over (-10 -1), we find that target runup is significantly smaller if the acquirer intends to form a joint venture with the target or is a passive investor. Specifically, if the acquirer intends a joint venture or passive investment, then target runup is 13.9% lower than if the acquirer had intended a merger/acquisition (significant at the 1% level), and 14.2% lower than if the acquirer had intended to be an activist (significant at 5%). Note, the acquirer's intent is a passive investment or joint venture when the indicator variables for an intent to merge or acquire and pursue an active investment are equal to zero.

Of all the control variables included, there is modest evidence that the size variable is inversely related to the runup prior to the 13D filing, which would support the notion of a smaller runup for larger firms.

Table 4 shows that when using the CAR over the (-10, -1) event window as the dependent variable, the coefficient of the indicator variable representing a non-financial corporate acquirer or private investor acquirer is 13.09%, and is significant at the 10% level. This result offers further support for our hypothesis that the level of informed trading (as measured by the target runup) is influenced by the type of acquirer.

When using the CAR over the (-10, -1) event window as the dependent variable, the coefficient of the private investment firm indicator is 14% and is significant at the 10% level in one of the two models. The sign of the coefficient is consistent with the hypothesized sign. The implication is that the estimated target runup is 14% higher when the acquirer is a private investment firm relative to when the acquirer is an investment advisor or broker. We therefore conclude target runup is smaller if the acquirer intends to be a passive investor or form a joint venture with the target. This evidence is consistent with the intent of the acquirer leaking to market participants before the 13D filing is released to the public. The control variables are typically not significant.

[Insert Table 3 here]

[Insert Table 4 here]

VII. CONCLUSIONS

We find evidence of a substantial information leakage (mean target runup = 12.7%) prior to Schedule 13D filings, which may explain why fewer than half of full-acquirers purchase a toehold in the target before attempting a full acquisition. The target runup is much stronger prior to a 13D relative to a 13G filing, which we attribute to the anticipated gains from a subsequent takeover of the target or activism imposed on the target. Further, while the target runup was 12.7% before all 13D filings, runup was even higher when the acquirer was a nonfinancial corporation or private investment firm, or when its intention was to merge with or acquire the target, or be an activist investor. The reduction in the offer price of a full acquisition afforded by a toehold is unlikely to offset the substantial information leakage in the target's stock price before the 13D filing. Our results should motivate toehold purchasers to seek alternative methods of acquiring stock (e.g. dark pools) so that other informed traders can not free ride based on the information leakage.

We also find that the target runup before a 13D filing is greatest during the event window (-10, -6). Therefore, any analysis of the effect of a Schedule 13D filing on the target stock should consider an event window starting no later than ten days before the filing. Academic research results from analyzing the stock price response surrounding 13D filings may be vastly different when including the 10-day window prior to the filing in the analysis, rather than the common (-3, 3) or smaller event windows. In fact, the abnormal returns over (-10, -1) are decreasing in magnitude as the filing approaches. Therefore widening the event window from (-1, 1) to (-3, 1) or even (-5, 1) would produce at a maximum only marginally better results because most of the information leakage occurs at least six days before the filing.

Lastly, over 90% of the effect of the 13D filing on the target's stock price is realized prior to the filing. This implies little information is revealed to the market when the 13D filing is made public, as most of the information has already been leaked to the market.

Figure 1 – Target Runup by Acquirer's Intent and Identity

Plots of CAR(-50, t) for all t in (-50, 20) where t = 0 is the filing date of the Schedule 13D with the S.E.C. Abnormal returns are calculated using the market model with respect to the CRSP equally weighted index. The top plot divides the 13D sample by the avowed intent of the acquirer in purchasing a stake in the target. The bottom plot divides the 13D sample by the identity of the acquirer.
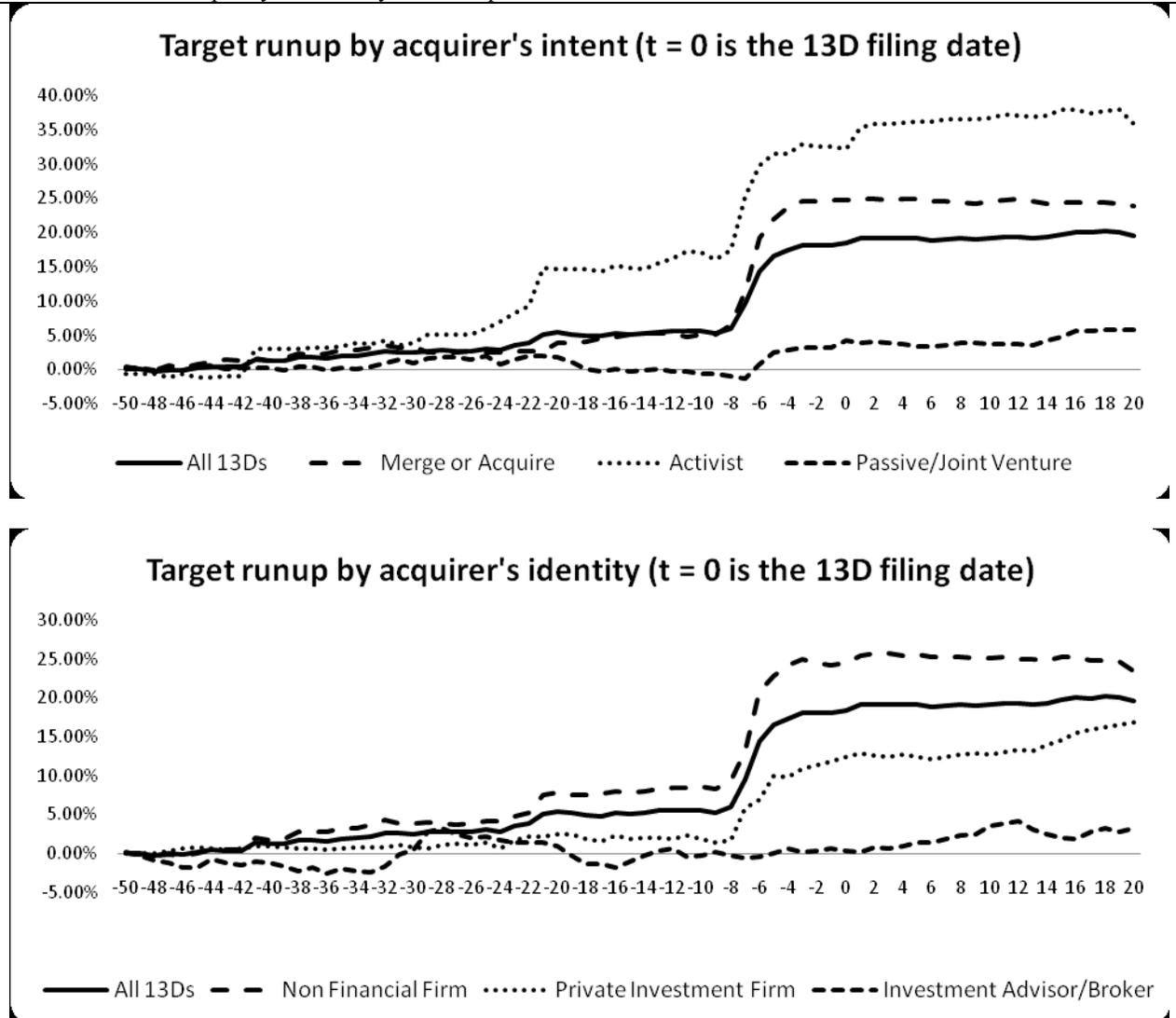
Table 1 - Univariate Results
Two-tailed t-tests for significantly different target runups (mean cumulative abnormal returns over the (-10, -1) event window). Abnormal returns are calculated using the market model with the CRSP equally weighted index. There are data on both the identity and intent of the acquirer in each Schedule 13D filing. With respect to the identity of the acquirer NONFINCORP signifies a non-financial corporate bidder, PRIINV a private investment bidder, and INVADVB that the bidder is an investment advisor or broker. Regarding the acquirer's intent INTMA signifies the bidder intended to merge with or acquire the target, INTACTINV that the bidder intended to be an activist, INTINV that the bidder intended to be a passive investor, and INTJVEN that the bidder intended to form a joint venture with the target. *, **, ***, and **** denote statistical significance at the 10%, 5%, 1%, and 0.1% levels respectively.

Combined Schedule 13D and 13G sample.

Runup before 13D	Runup before 13G	Diff.	t-stat	p-value
12.71%	-0.08%	12.79%	5.7	<0.000001***

Schedule 13D sample.

Binary Variable	n	Mean Runup (if=1)	Mean Runup (if=0)	Difference	t-stat	p-value
IDENTITY:						
NONFINCORP	71	16.6%	7.53%	9.07%	2.2	0.03**
PRIINV	42	8.86%	14.85%	-5.99%	-1.36	0.18
INVADVB	10	1.42%	13.7%	-12.28%	-3.86	0.0005****
NONFINCORP or PRIINV	113	14.32%	1.42%	12.9%	3.93	0.0004****
INTENT:						
INTMA	48	19.35%	8.82%	10.53%	2.62	0.01***
INTACTINV	28	20.39%	10.65%	9.3%	1.31	0.2
INTINV	44	3.6%	18.31%	-14.71%	-4.29	0.00004****
INTJVEN	3	-9.82%	13.48%	-23.3%	-2.49	0.08*
INTMA or INTACTINV	76	19.73%	2.61%	17.12%	4.87	0.000004****

Table 2 - Ordinary Least-squares Regressions of Target Runup before both Schedule 13D and 13G Filings. The sample is comprised of 242 Schedule 13D and 13G filings. Target runup over (-10, -1), (-5, -1), and (-2, -1) are denoted by CAR(-10, -1), CAR(-5, -1), and CAR(-2, -1) respectively. Abnormal returns are calculated using the market model with the CRSP equally weighted index. G is an indicator variable taking the value 1 if the filing is a 13G and 0 if it is a 13D. If the filing is a 13D then PT is the percent of the target that the acquirer owned at the time of the filing, and if the filing is a 13G then PT is set to 0. FRGN is set equal to 1 if the acquirer is located outside the U.S. and 0 if the acquirer is domestic. The variable ln(SIZE) is the natural logarithm of the target's market capitalization, and TOBINQ is the targets Tobin's Q value using Chung and Pruitt's (1994) approximation. The coefficients are above and p-values below. *, **, and *** denote significance at the 10%, 5%, and 1% level of significance.

	CAR(-10, -1)	CAR(-5, -1)	CAR(-2, -1)
intercept	0.12	-0.005	-0.001
	(0.09)*	(0.89)	(0.97)
G	-0.10	-0.03	0.001
	(0.0002)***	(0.02)**	(0.92)
PT	0.94	0.3	-0.05
	(0.007)***	(0.09)*	(0.51)
FRGN	-0.02	0.004	-0.005
	(0.68)	(0.84)	(0.55)
ln(SIZE)	-0.01	0.009	0.002
	(0.75)	(0.4)	(0.72)
(PT)ln(SIZE)	-0.26	-0.08	0.015
	(0.02)**	(0.18)	(0.53)
TOBINQ	-0.005	-0.002	-0.002
	(0.101)	(0.36)	(0.018)**
F-stat	9.28	2.8	1.2
	(3.8e-09)***	(0.013)**	(0.32)
Adj. R^2	0.17	0.042	0.005

Table 3 - Ordinary Least-squares Regressions of Target Runup before Schedule 13D Filings on the Acquirer's Intent. The sample is comprised of 123 Schedule 13D filings. Target runup over (-10, -1), (-5, -1), and (-2, -1) are denoted by CAR(-10, -1), CAR(-5, -1), and CAR(-2, -1) respectively. Abnormal returns are calculated using the market model with the CRSP equally weighted index. INTMA is set equal to 1 when the acquirer intended to merge with or acquire the target, INTACTINV is set equal to 1 when the acquirer intended to be an activist investor, and INTJVEN is set equal to 1 when the acquirer intended to form a joint venture with the target. A passive investment intent is represented by the prior three indicator variables being 0. PT is the percent of the target that the acquirer owned at the time of the filing, and FRGN is set equal to 1 if the acquirer is located outside the U.S. and 0 if the acquirer is domestic. The variable ln(SIZE) is the natural logarithm of the target's market capitalization, and TOBINQ is the targets Tobin's Q value using Chung and Pruitt's (1994) approximation. The coefficients are above and p-values below. *, **, and *** denote significance at the 10%, 5%, and 1% level of significance.

	CAR(-10, -1)	CAR(-10, -1)	CAR(-5, -1)	CAR(-5, -1)	CAR(-2, -1)	CAR(-2, -1)
intercept	0.19	0.027	-0.005	0.04	-0.02	-0.02
	(0.14)	(0.006)***	(0.94)	(0.46)	(0.4)	(0.2)
INTMA	0.13	0.13	0.02	0.02	-0.0005	-0.0005
	(0.013)**	(0.013)**	(0.43)	(0.44)	(0.95)	(0.95)
INTACTINV	0.14	0.14	-0.008	-0.006	0.00006	-0.00008
	(0.027)**	(0.02)**	(0.79)	(0.85)	(0.995)	(0.99)
INTJVEN	-0.09	-0.1	-0.02	-0.02	-0.02	-0.02
	(0.5)	(0.48)	(0.81)	(0.78)	(0.34)	(0.34)
PT	0.43	-0.004	0.27	0.05	-0.02	-0.008
	(0.39)	(0.98)	(0.27)	(0.45)	(0.79)	(0.72)
FRGN	0.015	0.022	0.01	0.02	-0.02	-0.02
	(0.84)	(0.76)	(0.73)	(0.65)	(0.18)	(0.17)
ln(SIZE)	-0.04	-0.07	0.008	-0.005	0.009	0.009
	(0.24)	(0.012)**	(0.69)	(0.71)	(0.17)	(0.03)**
(PT)ln(SIZE)	-0.14		-0.07		0.005	
	(0.36)		(0.35)		(0.86)	
TOBINQ	-0.006	-0.006	-0.001	-0.002	-0.002	-0.002
	(0.29)	(0.25)	(0.64)	(0.58)	(0.017)**	(0.02)**
F-stat	3.23	3.6	0.49	0.43	1.48	1.7
	(0.002)***	(0.002)***	(0.86)	(0.88)	(0.17)	(0.12)
Adj. R^2	0.13	0.13	-0.03	-0.03	0.03	0.04

Table 4 - Ordinary Least-squares Regressions of Target Runup before Schedule 13D Filings on the Acquirer's Identity. The sample is comprised of 123 Schedule 13D filings. Target runup over (-10, -1), (-5, -1), and (-2, -1) are denoted by CAR(-10, -1), CAR(-5, -1), and CAR(-2, -1) respectively. Abnormal returns are calculated using the market model with the CRSP equally weighted index. NONFINCORP is set equal to 1 when the acquirer was a non-financial corporation, PRIINV is set equal to 1 when the acquirer was a private investment firm. An Investment Advisor/Broker acquirer is represented by the prior two indicator variables being 0. PT is the percent of the target that the acquirer owned at the time of the filing, and FRGN is set equal to 1 if the acquirer is located outside the U.S. and 0 if the acquirer is domestic. The variable ln(SIZE) is the natural logarithm of the target's market capitalization, and TOBINQ is the targets Tobin's Q value using Chung and Pruitt's (1994) approximation. The coefficients are above and p-values below. *, **, and *** denote significance at the 10%, 5%, and 1% level of significance.

	CAR(-10, -1)	CAR(-10, -1)	CAR(-10, -1)	CAR(-10, -1)	CAR(-5, -1)	CAR(-5, -1)	CAR(-2, -1)	CAR(-2, -1)
intercept	0.172	0.25	0.17	0.26	0.02	0.05	-0.002	-0.008
	(0.22)	(0.03)**	(0.24)	(0.03)**	(0.77)	(0.4)	(0.94)	(0.66)
NONFINCORP or PRIINV	0.131	0.14						
	(0.1)*	(0.085)*						
NONFINCORP			0.13	0.13	0.008	0.008	-0.012	-0.012
			(0.12)	(0.12)	(0.85)	(0.84)	(0.38)	(0.37)
PRIINV			0.13	0.14	0.043	0.047	0.006	0.005
			(0.13)	(0.095)*	(0.31)	(0.26)	(0.66)	(0.7)
PT	0.53	0.094	0.53	0.1	0.22	0.08	-0.03	0.007
	(0.28)	(0.47)	(0.29)	(0.45)	(0.37)	(0.23)	(0.74)	(0.73)
FRGN	-0.002	0.01	-0.003	0.003	0.004	0.006	-0.02	-0.02
	(0.98)	(0.93)	(0.97)	(0.96)	(0.92)	(0.87)	(0.11)	(0.095)*
ln(SIZE)	-0.06	-0.08	-0.06	-0.08	-0.006	-0.015	0.004	0.006
	(0.14)	(0.003)***	(0.18)	(0.005)***	(0.77)	(0.31)	(0.57)	(0.21)
(PT)ln(SIZE)	-0.15		-0.14		-0.05		0.01	
	(0.36)		(0.38)		(0.52)		(0.66)	
TOBINQ	-0.01	-0.01	-0.007	-0.007	-0.002	-0.002	-0.002	-0.002
	(0.25)	(0.22)	(0.25)	(0.22)	(0.48)	(0.44)	(0.01)***	(0.011)*
F-stat	3.13	3.6	2.66	3.0	0.64	0.69	2.13	2.5
	(0.007)***	(0.005)***	(0.014)**	(0.0096)***	(0.72)	(0.66)	(0.045)**	(0.027)**
Adj. R^2	0.095	0.096	0.09	0.09	-0.02	-0.02	0.06	0.07

[1]One 13D filer was a member of the target management, and this filing has been excluded from the sample.

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